

The ESS amt 1a Bookshelf.

The loudspeaker as translator.



The Loudspeaker as Translator.

A loudspeaker translates electrical impulses into sound waves: Ideally, the loudspeaker/translator leaves nothing out and puts nothing extraneous in. It doesn't omit or color or mask. The perfect translator is perfectly simple.

- Simple and impossible, until the Heil Air-Motion Transformer revolutionized sound reproduction. The Heil midrange/high-frequency transformer is the perfect translator.
- There is only one compact system with a full-size Heil. The ESS amt-1a Bookshelf system. Perfectly simple.
- Your ears will appreciate the difference.

Air-Motion Transformation: Midrange/High Frequency

The Heil transformer, like most significant innovations, is much appreciated but a little mysterious. It is mandatory equipment for master reproduction techniques, yet the technological basis for its performance is often taken for granted. Actually, the Heil Principle of Air-Motion Transformation is as elegantly simple as it is effective.

The transformer's diaphragm resembles a lightweight, pleated curtain mounted between powerful ceramic bar magnets. Conductive strips on the sides of each pleat cause the pleats to expand or contract in step with the signal. The air is squeezed out, and accelerated to five times the velocity of the diaphragm itself. In effect, the

Heil transformer *uses air to move air*, operating on the principle of pneumatic leverage.

Cone driving systems, on the other hand, are sluggish and inefficient by design. The cone's mass is huge; driving energy is largely devoted to overcoming its great inertia. The cone resonates and can "break up" at high frequencies. A cone driver only pushes air like a piston, in a one-to-one ratio.

The Heil driver's air-motion transformation ratio is *five times* better than that of any conventional speaker.

Other crucial design parameters are solved by the Heil Air-Motion Transformer. The extremely light weight of its diaphragm eliminates resonance. Since the driving impulse is spread uniformly over the diaphragm surface, harmonic distortion from "cone breakup" is non-existent. These are inherent benefits of the Heil design. For conventional speakers, they remain problematic goals.

Remarkable dispersion characteristics are another natural advantage of the amt's design. With a 120° pattern at 16 kHz, the amt maintains a solid expanse of stereo imagery to frequencies beyond audibility. Whatever the speaker/listener positioning, imaging is precise and penetrating.

The audible payoff is clarity, a perfect re-creation of the music's fine and changing texture. Female vocal depth,



the harmonic complexities of bow against string, and fleeting nuances of program ambience emerge with presence, immediacy, and power. It's all there.

Low Frequency Performance

Deep, articulate low frequency response is provided by the same 12" bass driver used in the top system of the ESS line, the amt-1a. Its 7 lb. 6½ oz. (3.36 kg) magnet assembly, rigid die-cast frame, and large-radius coil ensure state-of-the-art bass performance and dependability — response that *feels* substantial in the lower registers.

Power

The amt-1a Bookshelf system is designed to convert high power loads into clean, full sound, without effort and without distortion. The air-motion transformer's Teflon diaphragm both resists and dissipates heat outstandingly. The bass driver's 2" coil and high-temperature cone composition are significant factors in the system's low-end strength. "At power," the amt-1a Bookshelf is clear and dependable after other compact systems have reached their limits.

Dividing Network

The sophisticated crossover network designed for the amt-1a Bookshelf operates at 850 Hz, providing excellent woofer/amt phasing and precise signal distribution. Air-cored inductors are used to avoid the high-amplitude distortion possible with metal-cored units. Although air-cored inductors are an unseen refinement, they significantly enhance the linearity of a dividing network.

Controls

Your listening environment's acoustic character may prompt some fine adjustment of the speaker system. A continuously-variable attenuation or accentuation control affects 850 Hz to beyond hearing, without blunting or peaking the higher frequencies and upper harmonics.



The control panel is situated at the rear of the cabinet for easy access.

The construction of the amt-1a Bookshelf speaker enclosure reflects the same concern for distortion-free reproduction shown in the system's hardware. The interior dimensions of the enclosure are meticulously coordinated to the bass driver's specific characteristics. Precise mathematical tuning determines port design.

Walnut veneer is matched, fitted to the cabinet superstructure, and hand-finished from sanding to final rub-down. A strong weave of sonically-transparent polyester fiber is used in the grille treatment, completing the speaker's appearance of simple, functional grace.

The Final Arbiter

A classic integrity, from cabinetry to driver mounting detail, pervades the manufacture of the amt-1a Bookshelf. Its superiority can be demonstrated in many ways, reflected at length in technical data. But to the final arbiter, your ear, there is only one proof. The audible proof.

A critical evaluation of the amt-1a Bookshelf speaker system will reveal how perfect translation can be.

ESS is constantly researching new materials, production methods and design refinements which may be introduced into existing product lines without notice or obligation. For this reason, any current ESS product may differ in some respects from its published description but will always equal or exceed performance specifications of the original design.

Specifications

System

Power Capacity	75 Watts continuous program 350 Watt peak Circuit breaker protected
Nominal Impedance	4 ohms
Dispersion	120° horizontal, 30° vertical
Crossover Frequency	850 Hz
Efficiency	One Watt input produces 82 dB sound pressure at a distance of 15 feet (4 m). ± 3 dB 50-20,000 Hz.
Frequency Response	
Heil Air-Motion Transformer	
Total Radiating Area	29 sq. in. (187.24 cm²)
Transformation Ratio	5.0:1 velocity increase
Magnet Assembly Weight	12 lbs. 15 oz. (5.87 kg)
Flux Density	4,500 Gauss
Square Wave Rise Time	15 microseconds at 5,000 Hz.
Low Frequency Driver	
Nominal Diameter	12" (30.48 cm)
Voice Coil	2" (5.08 cm)
Magnetic Assembly Weight	7 lbs. 6½ oz. (3.36 kg)
Flux Density	10,500 Gauss
Controls	
Midrange/High Frequency	Continuously variable attenuation or accentuation from 1,000 Hz to beyond audibility.

Decor

Finish	Oiled walnut veneer
Grille Color	Brown

Dimensions

24" x 14" x 14"	(60.96 cm x 35.56 cm x 35.56 cm)
Shipping Weight	60 lbs. (27.27 kg)



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